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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,468	03/31/2004	Kit S. Lam	02307W-131410US	6380

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TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

YU, MELANIE J

ART UNIT PAPER NUMBER

1641

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,468

Applicant(s)

LAM ET AL.

Examiner

Melanie Yu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 9, 10 and 14-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8 and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, claims 1-13, and species group A- oligosaccharide, group B- hydrogen bonding, and group D- glass; in the reply filed on 17 June 2005 is acknowledged. The traversal is on the ground(s) that a search for groups I-IV will provide materials relating to methods using the compositions. This is not found persuasive because different methods for making and using the product of group I exist. Therefore a search for the product of group I will not encompass a search for making and using the product of group I and different search terms will be required. Therefore, the inventions are independent as claimed and a serious search burden exists. Furthermore, although the methods of groups II-IV are of the same class, their sub classification is different.

The requirement is still deemed proper and is therefore made FINAL. Therefore claims 14-28 are withdrawn from further consideration as being withdrawn to a non-elected invention. Furthermore claims 9 and 10 are withdrawn as being drawn to a non-elected species, claim 9 is drawn to a biopolymer of agarose which is a non-elected species, and claim 10 is drawn to a biopolymer of human serum albumin and a support of polystyrene, both of which are non-elected species.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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2. Claims 1-8 and 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear whether the spotted biopolymers are intended to form a plurality of discrete regions, or whether discrete regions exist on the substrate and the substrate further comprises a spotted biopolymer. The phrase "can be the same or different" is vague because it is unclear whether the microarray is intended to encompass the same or different ligands in any of the discrete regions, or whether the ligand in the discrete regions can merely be capable of being the same or different.

With respect to claims 11-13, the claims recite "the difference" in line 1 of the claims. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Li (US 6,704,104).

Regarding claims 1-3 and 7, Li teaches a microarray comprising a support of glass (col. 5, lines 55-58) having a plurality of discrete regions having a biopolymer of oligosaccharides

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(col. 6, lines 50-66) spotted thereon (col. 13, lines 14-20; col. 16, lines 46-53), wherein attached to the biopolymer in each of the regions is a ligand of sugar that can be the same or different from a ligand in any other of the discrete regions (col. 6, line 65-col. 7, line 12), and wherein the concentration of the ligand in the discrete regions is substantially normalized (amount of light corresponds to the concentration of ligand and is normalized, col. 14, lines 9-18).

With respect to claim 6, Li teaches a biopolymer attached to the support via covalent interactions (col. 7, lines 13-18).

4. Claims 1 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Chenchik et al. (US 6,489,159).

Chenchik et al. teach a microarray comprising a support having a plurality of discrete regions having a biopolymer spotted thereon and attached via hydrogen bonding (col. 9, line 54-col. 10, line 6), wherein attached to the biopolymer in each of the regions is a ligand that can be the same or different from a ligand in any other of the discrete regions (col. 11, lines 39-48; col. 12, lines 3-14), and wherein the concentration of the ligand in the discrete regions is substantially normalized (col. 13, lines 4-30).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 6,704,104) in view of Bertozzi et al. (US 2003/0073157).

Li, as applied to claim 1, teaches microarray comprising a ligand attached to a biopolymer, but fail to teach attachment via chemoselective ligation.

Bertozzi teach attachment of a ligand to a biopolymer via chemoselective ligation (oligosaccharides are functionalized with chemoselective ligation in order to become suitable coupling partners, par. 63; biopolymer is an oligosaccharide, ligand is peptide scaffold, par. 57-58), in order to provide formation of a better sugar-peptide glycosidic bond.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the microarray of Li, a ligand attached to a biopolymer via chemoselective ligation as taught by Bertozzi et al., in order to control oligosaccharide structure and uniformity and provide better recognition.

6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chenchik et al. (US 6,489,159).

Chenchik et al., as applied to claim 1, teach concentration of a ligand in discrete regions substantially normalized and a minimal signal variation desired between discrete reference spots

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(minimal signal variation corresponds to the amount/concentration of ligand, col. 15, lines 7-10), but fails to recite a specific value for the concentration difference between discrete regions of less than 50%, 20% or 5% concentration difference.

However, it has long been settled to be no more than routine experimentation for one of ordinary skill in the art to discover an optimum value for a result effective variable. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum of workable ranges by routine experimentation” Application of Aller, 220 F.2d 454, 456, 105 USPQ 233, 235-236 (C.C.P.A. 1955). “No invention is involved in discovering optimum ranges of a process by routine experimentation.” Id. at 458, 105 USPQ at 236-237. The “discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” Since applicant has not disclosed that the specific limitations recited in instant claims 11-13 are for any particular purpose or solve any stated problem, and the prior art teaches that the amount of ligand between regions should be minimal, absent unexpected results, it would have been obvious for one of ordinary skill to discover the optimum workable ranges of the methods disclosed by the prior art by normal optimization procedures known in the microarray art.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on M-F 8:30-5.

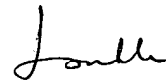
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melanie Yu
Patent Examiner
Art Unit 1641



LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

07/22/05